

Symptoms and Systems: Intelligence And Information For Future Urban "OOTW"

SAW 1998

Subject Area Intelligence

**SYMPTOMS AND SYSTEMS:  
INTELLIGENCE AND INFORMATION  
FOR FUTURE URBAN "OOTW"**

by

Joseph H. Wheeler III  
Major, USMC  
School of Advanced Warfighting, AY 97-98

Paper submitted to the Faculty of the Marine Corps  
School of Advanced Warfighting

January 1998

The views expressed in this paper are those of the author and  
do not reflect the official policy or position of the  
Department of Defense or the U.S. Government

<b>Report Documentation Page</b>			<i>Form Approved OMB No. 0704-0188</i>		
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>					
1. REPORT DATE <b>1998</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-1998 to 00-00-1998</b>			
4. TITLE AND SUBTITLE <b>Symptoms and Systems: Intelligence And Information For Future Urban ?OOTW?</b>			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>United States Marine Corps,Command and Staff College, Marine Corps University,2076 South Street, Marine Corps Combat Development Command,Quantico,VA,22134-5068</b>			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>43</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

## ABSTRACT

### SYMPTOMS AND SYSTEMS: INTELLIGENCE AND INFORMATION FOR FUTURE URBAN OOTW

This paper posits that military operations other than war (OOTW) in an urban environment require information and intelligence from two complex but ultimately knowable systems. First is the city itself, which is made up of three interconnected subsystems, the physical environment, the people, and the infrastructure. The second system is the outside actors sent to accomplish a specific, possibly changing mission. The parts of that system include the groups of people; military and nonmilitary, the OOTW mission assigned, the information and intelligence to support, the mission, and the resources available to accomplish the mission. All of the parts of the outside actor system are there to change the city, in some way shaping it to their own ends.

While this description may sound overly complicated, urban planners, historians, economists, sociologists, and military doctrine writers have already done a great deal of work on analyzing certain aspects of both systems. One of the paper's main points is the necessity to look beyond traditional military templates and the narrow focus of intelligence as traditionally defined in order to first understand the dynamics of the systems and then to exploit the information available to effect the mission.

No child ever grew up in, nor was any product ever produced in the numerous "combat towns" on military bases and at law enforcement training facilities. Similarly, neither Stalingrad nor Mogadishu were built as battlefields. Whatever changes the future brings to warfare, it will continue to include unexpected contingencies in real cities. Cities are more than the physical attributes of the buildings and streets which often define them. Cities are complex systems made up of: their physical characteristics, their streets, schools, homes and factories; the people who live, work, or transit through them; and perhaps most ephemeral, the dynamic infrastructure of utilities, communications, transportation networks, the exchange of goods and services, and the transfer of funds that supports the other two elements. Each part of the system must be present for a city or town to survive, much less to prosper.

Military operations in cities can vary so widely that they are sometimes named "complex contingencies." More than merely the inherently ambiguous nature of "Peace Enforcement" or "Disaster Relief," they encompass the bewildering array of groups and organizations that are a part of the conduct of those operations. This includes the local populace, including the armed factions which can be either potential enemies or allies, as well as representatives of international relief organizations. Ranging from the International Red Cross to private groups attempting to deliver free cattle to farmers outside the cities, each is an actor on the scene, and each brings a wide variety of motivations and occasionally changing roles.<sup>1</sup>

Because of the complex and changing nature of the urban system and the missions which may be assigned to U.S. military forces there, requirements for information and intelligence to support these operations are also challenging. Even a perfect view of a street and a clear understanding of construction methods and materials will not divine the intentions of the residents of that street. To

---

<sup>1</sup>Edward Cody, "Peacekeepers' Pastoral," *Washington Post*, 25 August 1997, Sec. A12.

know both the buildings and the people is without value if the water distribution system breaks down and the U.S. military force finds itself bogged down in the logistical challenges of locating sources of water, pumping it, storing it, transporting it, and equitably distributing it. Not only is a city a more difficult place than undeveloped terrain on which to operate but the missions assigned serve to break down traditional distinctions between intelligence and information.

Knowledge about the operating environment is traditionally divided into intelligence and information. Intelligence is that knowledge which is generally focused on the enemy and which is usually denied to the commander. Certainly the capabilities, intentions and location of the enemy is information which he protects. On the other hand, information is knowledge which can simply be obtained by looking or asking for it. There is also a third type of knowledge is not so easily categorized. Terrain orientation, even if it is terrain behind enemy lines, is usually available on unclassified maps. The location of wells and roads which appear on maps, if in enemy held terrain, may be changed by that enemy. New wells may be dug, old wells poisoned. Roads may be guarded, mined, or destroyed. New, perhaps better, roads may be built. The field which appears to be an ideal helicopter landing zone on a map may be used to store construction materials. These problems are exacerbated when thinking about the battlefield in nonlinear terms.

If there is no "front line," where does that knowledge cease to be information and start to be intelligence? These effects become nightmarish when missions cannot be easily defined as either wholly combat or totally peaceful in nature. Allies are many and changing, and the "enemy" may be an abstract concept such as hunger, ignorance or repression. Additionally, other groups on the scene play multifarious parts. Nations which contribute "peace keeping" forces may, in fact, be using sponsoring government funds to re-equip their army, or even to settle old ethnic, tribal, or religious scores with the inhabitants of the city in question. In some cases the forces sent to

provide aid may in addition bring new and more sophisticated forms of corruption. Witness the Ukrainians in Bosnia. Relief organizations may play their role with one eye towards the relief provided and the other towards how their efforts are perceived by their fund providers. Sometimes their actions, though without malevolent intent, serve to put U.S. forces in danger. Because it is vital for them to be viewed in the country of operations as independent actors, relief organizations may intentionally distance themselves from military peacekeeping forces, until one is killed by a teenage gunman, at an impromptu checkpoint.<sup>2</sup>

The very arrival of U.S. forces in a country changes the nature of the trouble that brought them there. However, the fact that there is no clear answer does not abrogate the responsibility to formulate the questions. Complex "operations other than war" (OOTW), often coupled with actual combat in urban terrain, are the most frustrating and dangerous situations imaginable. U.S. commanders *must* master this environment. They are expected to accomplish the missions expeditiously, and with few U.S. and no inadvertent civilian casualties. Like any large problem, identifying the knowledge requirements to support military operations in the urban environment is probably best accomplished by breaking the problem into component parts. This problem seems to fall into four major parts. First there is the physical environment of the city; second the "people" whether they be defined as enemies, aid recipients, Non-Governmental Organizations (NGO's) or putative "allies;" third, the assigned mission or missions; and finally, the resources available to accomplish the mission and the suitability and acceptability of each general intelligence discipline. None of these categories can be considered as either discrete or unchanging "boxes." Indeed urban conflict can be studied only as a part of a dynamic system. Each component informs the

---

<sup>2</sup>Michael Ignatieff, "Unarmed Warriors," *New Yorker*, 24 March 1997, 54-71 and Lee Hockstader, "How Did We Deserve This?" *Washington Post Magazine*, 17 August 1997, 12-17, 28-30.

others. If merely mastering a component part ensured overall success then every competent putt-putt golfer would be on the PGA tour.

Inadequate knowledge of the operating environment leads to inefficiency at best, and disaster at worst. Gathering information is an objective, quantitative activity performed in response to subjectively formulated questions. But there is no formula for success. There is not even a formula for knowing exactly what information is essential. In fairness, conventional warfare permits pattern recognition to operate in the fore, identifying knowledge gaps with a fair level of fidelity and articulating those requirements in ways familiar to those being asked to provide answers.<sup>3</sup> Missions such as "show of force" or "peace building" require very different types of information, information and intelligence which can be outside the "comfort zone" of many commanders. At times, the questions may sound more like the dust jacket on a mystery novel than a request for data. "Who are my allies? Are yesterday's allies today's allies? Has the mission changed? If the mission has changed, are the forces available to me still relevant? Are tribal, nuclear familial, or independently chosen social groups the most important relationships to the most violent groups in this city? Is the government legitimate? Did the nineteenth century colonial power dig storm drains? Will someone shoot at the U.S. troops at a checkpoint? Why? When?" On reflection, one begins to question whether the organization of the missions themselves are clearly understandable.

There are sixteen "Operations Other than War" missions identified in joint doctrine.<sup>4</sup> Add to that the always present specter of conventional mid-intensity conflict---war as we historically think of it. Of those seventeen missions three are exclusively or primarily maritime or air and therefore reasonably exempt from urban terrain considerations. Of the fourteen remaining

---

<sup>3</sup>Field Manual (FM) 34-130, *Intelligence Preparation of the Battlefield*, (Washington, DC: Department of the Army, May 1989).

<sup>4</sup>Joint Publicaton (Joint Pub) 3-07, *Joint Doctrine for Military Operations Other Than War*, (Washington, DC: Joint Chiefs of Staff. June 1995), iv.

missions some are so broad as to be of little use, "combating terrorism" for example, and some so vague that the taxonomy is of little use (calling out the military to put down riots in U.S. cities and fire fighting in national parks would both fall under "Military Support to Civil Authorities").

## **THE ENVIRONMENT OF THE CITY**

Though difficult to define with precision, cities are usually thought of as semi-permanent or permanent concentrations of structures and people. Even though religious meetings or even Nebraska home football games may draw together large numbers of people, and often claim that they are the "third largest 'city' in the state" for a certain weekend, they are not cities. Mere gatherings of people do not seem to be sufficient to be called a city.

Similarly, though we speak of "ghost towns," those groups of abandoned structures have little, if any, more claim to being called cities than does a huge cemetery. They are artifacts; things made and used by man, indicative of his culture, but nothing more. Again, cities seem to require all three components: people, structures, and some degree of permanence.

All three coexist only when there are transactions taking place in the urban environment. Cities do not spontaneously come into being. They develop due to a confluence of factors, all of which permit the ongoing transactions of city life. That reason may be the suitability of the location as a transfer mode for trade. For example, the reasons for port cities like New York and New Orleans are obvious. Even the inland city of Chicago prospered because it was a rail hub, linking the cattle ranches and farms of the Midwest to the consumer markets of the East. Also, it was also the southern tip of the great lakes waterway. Ships carrying logs and iron ore from the North docked there and unloaded at the steel and lumber mills. Processing industries sprang up to feed the rail cars and barges. Canals carried the processed or value added material down to the Mississippi River. Even today, cities exist primarily because profit can be gained by either manufacturing or a

change in mode of transportation, or both. Cities survive because they adapt their systems to economic developments. Though still undeniably a great port and transfer point, much of New York's wealth as the American nexus of commerce now comes from its representative economy, one of paper or electronic transfers rather than the exchange of chattel such as pelts for rifle flints. The stock exchanges and banks form a staggeringly complex, large scale, and purely economic transfer point. Admittedly, not all cities are patently economically driven. So-called "college towns," or "post towns," such as Quantico Virginia, a virtual island surrounded by the sprawling Quantico Marine Base, and national capitols like Washington DC, Brasilia Brazil, and Riyadh are all arbitrarily chosen locales in which functions seemingly apart from commerce are performed. Seemingly is the key word, for if tuition or military pay, or tax dollars or oil revenues stopped fueling the economies of those cities, they would quickly wither. Admittedly some would survive the shock but only with dramatic changes to their economies.

These distinctions are important for military operations because they go to the heart of influencing the urban environment. Cities must bring in various things to support their populations and must generate money which those who live there use to purchase the goods and services they need to survive. Some cities, located on bodies of fresh water, can support either the direct drawing of water or the digging of wells. In most cities the distribution of water is a municipal function. Allied to this function is the disposal of sewage and garbage. Cities can and do exist without sewage systems but not for long and not without dangerous health repercussions:<sup>5</sup> Finally, cities of any significant size cannot produce their own food. This guarantees an interaction with outside sources. Therefore, the first logical requirement for intelligence in a city is to

---

<sup>5</sup>Bill McKibben, "The Reporter at Large: Apartment," *New Yorker*, 17 March 1987, 43-91. This fascinating novella length article looks at the water, power, gas, sewer and garbage systems of the city of New York, providing remarkable insights into the complexity of the infrastructure of a major city.

understand its interactions. How does the city operate? By trade, licit or illicit? By manufacturing from steel to cocaine? By tax revenues or electronic commerce? The question is to identify those sources, often manifold, by which the city actually functions. While maps of the city are also important, unlike maps of open country, or static "combat towns," they can never hope to portray many of the things most useful to accomplishing a mission assigned to a military force in an urban environment. While a military force can perform its tasks without such information, as they have ever since the Barbarians sacked Rome, modern U.S. military forces are expected to do so with minimum casualties, either military or civilian, and at a level of efficiency and effectiveness appropriate to the "precision" force that the U.S. population has been led to expect.

The second aspect of the physical environment is indeed the physical domain, the brick mortar, wood and asphalt of the city. In analyzing this piece of the picture military doctrine seems quite good. The cities' physical structures can be categorized, the parts divided into "core" or downtowns, which are usually characterized by a high density of multiple story structures cut into blocks by cross streets of greater or lesser regularity. Beyond this is the surrounding urban sprawl of lower buildings, more widely separated, with some solid rows of low cost housing and small businesses and shops on the main thoroughfares. Further still are the fringe areas of low buildings and few roads, often interspersed by wide open areas used for everything from agriculture to junk yards. An additional category, particularly in societies with developed manufacturing and trade components to their economies, is the industrial area such as the famous tractor plant at Stalingrad, a labyrinth of yards, mills, fabrication buildings, and storage areas.<sup>6</sup> Of the World War II battle for Stalingrad itself, Drew Middleton may have written with startling prescience of future combat:

---

<sup>6</sup>Alan Clark, *Barbarossa: The Russian-German Conflict, 1941-45* (New York: Signet Books, 1966), 248-269.

The war of maneuver, of brilliant tank attacks and counterattacks, had degenerated into a dogged and bloody defense by the Russians of buildings and floors in buildings and finally rooms on floors. There were no large units engaged. Hand-to-hand combat, a rarity in World War II (despite Hollywood) became customary here. In ruined, often burning buildings, Germans and Russians sought each other in the swirling smoke.<sup>7</sup>

Today that category also includes the ubiquitous light industrial park. Spacious, low, somewhat flimsy complexes of corrugated metal warehouses and light manufacturing plants surrounded by lots for trailers, international standards organization (ISO) shelters, and open air outdoor storage. This is the more common type of modern industrial construction.

With this wide variety of urban areas one thing that becomes immediately apparent is the inadequacy of traditional maps. They depict the type of construction, density and heights of structures poorly, if at all. Nor do they usually show the alternate "paths" within a city. Cities often have alleys which are, in many cases, better avenues of travel than streets. Though easily blocked, they are often built to accommodate the types of large vehicles used by U.S. forces. As cities tend to break up larger unit formations, roofs of row houses and contiguous buildings can also be used as roads for small teams of infantry.

Another, albeit understandable, omission in the view of trafficability depicted in most commonly available maps is the subterranean paths of older cities. Though less common in the developing world, sewers, utility tunnels, subways, and even rail equipped trash collection tunnels honeycomb many cities. In a recent example of the latter, a significant part of downtown Chicago flooded when a wall separating the Chicago river from such a tunnel system collapsed. The path of destruction followed an extensive, though nearly forgotten, turn-of-the-century underground

---

<sup>7</sup>Drew Middleton, *Crossroads of Modern Warfare* (New York: Peter Bedrick Books, 1984), 123.

garbage hauling system. North Koreans, Marseilles bank robbers, Peruvian anti-terrorist units and others have discovered the benefits of traveling underground in an era of closely watched surface routes.<sup>8</sup>

One of the greatest challenges presented by operations on urban terrain is that the U.S. military force will, in almost all cases, be in the position of the "attacker." They will always be the element introduced into a preexisting situation. The local populace will already be there as will the conditions which caused military forces to enter. In a disaster ravaged city, while the military works with maps and imagery trying to match what it sees with what situations currently exist, the local populace will already know where the roads and paths are and which streets will retain their true nature as canals even after the flood waters recede. Local clan warriors will have grown up on the alleys and in the labyrinthine market districts. Even international relief workers will have a better feel for "where the dangers lie" than will the newly arrived American soldier.<sup>9</sup> The learning curve must be steep and efficient if U.S. policy makers' expectations of quick resolutions and chariness of casualties are to be met.

The military most often practices and theorizes on the battlefields of its preferred war. Even the much ballyhooed "system of systems" and the "battlefield transparency" envisioned for the future military is very much oriented towards conventionally arrayed forces on open terrain.<sup>10</sup> The vast areas which can be kept under observation down to targeting level resolutions matter little

---

<sup>8</sup>In addition to numerous popular press articles see: Glenn W. Goodman, Jr., "Deep Underground Tunnels," *Armed Forces Journal International*, June 1997, 61.

<sup>9</sup>Jonathan T. Dworken, *Improving Marine Coordination with Relief Organizations in Humanitarian Operations*, CRM 95-161.09 (Alexandria, VA: Center for Naval Analysis ["CNA" hereafter], August 1995), 12, 24-25.

<sup>10</sup>*Joint Vision: 2010*, (Washington DC: Chairman of the Joint Chiefs of Staff, Department of Defense, undated), 10-27. While this document gives a nod to both Operations Other Than War and the importance of people in the equation, its authors are clearly taken with technological solutions to conventional warfare.

when the "battlefield" in question is compressed into a few hundred heavily built up acres of concrete, asphalt, and thousands of citizens.

The effect of urban terrain serves to denigrate many of the U.S. military's strengths with asymmetric advantages of its own. Precision targeting to limit collateral damage becomes all the more important due to the twin factors of a high density of population and buildings, and by the difficulty of finding any valid target at all. While the military is optimized to destroy things, its capabilities can be stretched to include the non-combat OOTW missions. Precision targeting for ordnance becomes useless in such ambiguous and "unmilitary" situations. Similarly, the advantages gained by owning the best, and fastest aircraft are minimized when, even flying at near stall speeds, the aircraft pass over the area of interest in a few seconds. Helicopters, while offering greater relevance to the types of missions expected to be assigned, may become all too lucrative targets for shoulder fired antiaircraft missile gunners. Concealed in the near perfect firing positions offered by a high density of multistory structures and the jumbled and chaotic mess of the "floor" of a city in distress they will be difficult to find and nearly impossible to take out. Even in those circumstances where such force is brought to bear, and they will be few, the problem of picking out friendly forces and noncombatants from hostiles presents real challenges.

Armor and artillery capabilities, which were designed for battles in the Fulda Gap but were put to such good use in the deserts of Southwest Asia, are of little use when they can neither mutually support nor find suitable targets. In fact, U.S. operations in Mogadishu showed that the very protection offered by armor inhibited the necessary field of vision to operate on narrow, populous streets. It caused the crews to "unbutton," often riding on the outside of their vehicles. This occasionally subjected them to the irony of a multimillion dollar, state-of-the-art fighting vehicle being rendered ineffective by having its commander taken out by a paving stone thrown by a

teenager.<sup>11</sup> As history has shown, armor unsupported by infantry often suffers in urban conflicts.

Pyrrhus was killed by an Argivean woman heaving a paving stone as he walked through the streets of the "subdued" city.<sup>12</sup> The Russians taught the same lesson in World War II but had to relearn it in Prague in 1968 and again in Grozny in the mid-1990's.

This imbalance also extends to intelligence and information systems. Many technical systems are geared to detecting movement, change, or signatures. Unfortunately, change and movement are by definition part of the urban environment.<sup>13</sup> Seismic, acoustic, magnetic and infrared sensors and many airborne collection platforms can be quickly overwhelmed by the very volume of data they gather, assuming their operators can appropriately set the threshold for background signatures in the first place. Tactical signals intelligence (SIGINT) systems are, for the most part, designed to capture VHF (very high frequency) and HF (high frequency) radio signals but the environment in urban areas is chiefly wire, fiber optic, or UHF (ultrahigh frequency) and above. While exploitation of the ubiquitous cell phone technology holds promise, digital cellular technology makes this technically more difficult and in cities which may be without power for the remaining undamaged repeater stations, may force communications into VSAT (very small aperture terminal) systems, the exploitation of which carries with it both technical and potential legal prohibitions.<sup>14</sup> Though capabilities exist to overcome these challenges, it requires an "only game in town" priority to receive the necessary theater and national resources to be successful.

---

<sup>11</sup> Major Michael Campbell, USMC, a tank company commander while in Somalia, interview by author, 20 May 1997 and FM 90-10, *Military Operations on Urban Terrain*, (Washington DC: Department of the Army, August 1979), 1-10--1-11.

<sup>12</sup> Pausanias, *Description of Greece*. (272 B.C.E.). I.13.8. (<http://hydra.perseus.tufts.edu/ogi-bin>).

<sup>13</sup> FM 90-10-1, *An Infantryman's Guide to Combat in Built-up Areas*, (Washington DC: Department of the Army, January 1989), 1-1 to 1-8.

<sup>14</sup> GNI: *Technology Tutorials and Overviews and Vocabulary*, (Delran, NJ: Datapro, a McGraw-Hill Information Systems Company, 1993), 1050-21, appendix O.

Communications difficulties are none the less present in transmitting friendly force data. The tactical radio systems purchased for small units operate at well below optimal efficiency in the attenuating conditions of the cities. Power lines (even if not working), reinforced concrete, corrugated ferrous metals, subterranean water, and an inability to maintain radio line of sight are all inhibiting factors. The earth terminals which even small units carry with them have passed from luxury to necessity, especially when one considers the often austere environments in which many operations other than war are conducted. Forward deployed units must reach back to distant theater headquarters and even to the continental U.S. for supplies and policy guidance. All of this communication capability comes with a price in size, support requirements, and susceptibility to single point failure. But all the ambiguity and challenges of operating in the physical environment of the city pales before the complexity of competing *human* interests in determining knowledge requirements for urban OOTW.

## **PEOPLE**

Just as the physical aspects of the city system are in many ways less transparent than military operations on undeveloped terrain, so are the human factors in urban OOTW far more mutable than comparisons of competing militaries. U.S. forces operating outside their country have always had to consider enemies, allies, their own forces, and neutrals. And while these categories are still valid, particularly in urban OOTW, the intelligence effort to define those roles can yield but a snapshot in time.

The first group for consideration is the "enemy." The term may be misleading because, in the sense intended here, it must encompass those who receive the attention and efforts of the U.S. military in a wide variety of missions. When in fact, the real enemy is the situation which U.S. forces are present to alleviate a better term would be "aid recipients". In such cases the enemy

may be hunger or oppression but it can only be attacked through either those who are hungry or in the second case, through a combination of protecting those who are oppressed and attacking those who are the oppressors. In any event, the enemy is the target of U.S. attentions, whether it is people or the effects which drew American forces to the region in the first place.

U.S. military men and women see themselves as just that: Americans serving in the military. In almost all cases they identify themselves as agents of good and their nation as an engine of moral principles and actions. It is sometimes difficult, when holding such preconceptions about the roles of the military and government, to see the local circumstances as they are.

Frequently, in the less developed world the government is but an instrument of personal gain for the ruling elite. The police and military are less the keepers of order than the keepers of *the order*. In one recent example, U.S. involvement in Haiti in the 1990's, the so-called "morally repugnant elite" had long used the police and military as agents of repression to maintain their hold on power.<sup>15</sup> A paramilitary clique, playing the part of a political party (the Front for the Advancement and Progress of Haiti [FRAPH]) added muscle to the equation.<sup>16</sup> The government didn't provide services except in response to bribes or intimidation. Even the opposition party was often seen as little more than a different set of faces in the same roles. Into this superheated environment the U.S. military was sent to enforce the mandate of the recent elections. In towns and cities throughout Haiti, U.S. forces were left, often to their own devices, to sort out the "bad guys" from the "good," or at least less bad, develop sources of information, and administer justice, really more along the lines of basic conflict resolution. One of the difficulties in sorting out

---

<sup>15</sup>Amy Wilentz, "Letter from Haiti: Lives in the Balance," *New Yorker*, 26 December 1994-2 January 1995, 141 and Bob Shacochis, "The Immaculate Invasion," *Harpers*, February 1995, 44-62.

<sup>16</sup>Shacochis, 46.

such situations is merely identifying the players without the dubious luxury of having spent a lifetime in the country.

Consider the exhaustively examined situation in Somalia. There was no liberal western-style democratic government in any form waiting in the wings to be restored to its rightful place. Allegiances were chiefly tribal and clan, with an ever changing set of *modi vivendi* and accommodations between them. Such relationships are not only common in much of the developing world but are in fact more the rule than the exception. Traditional tribal relations are set against new interrelations in the urban environment. Such flexibility may mean the difference between a job and unemployment and possibly starvation. Apparent harmony between groups may run no deeper than what is required to live, or, in the absence of long standing antipathies, new and abiding alliances may form.<sup>17</sup> Another aspect of urban life is the variety of relationships which individuals may have. In rural settings the clan may be the context of work, worship, and social responsibility, as when for example, a member of the group has grown too old or infirm to contribute to the community as a whole. On the other hand in the city a person may work alongside strangers, worship with enemies, and depend on a tax supported social security to care for him in case of illness or old-age.

As referred to earlier, the city is a system, and as such is dynamic. Accommodations and adaptations are the rule. The depth of those changes is difficult to gauge. Motives may be even more opaque. The group which preys on those in need of relief may be allied with them tomorrow. The intelligence requirements to make decisions in such an environment may be the most difficult of all. The intelligence *cycle* of constant collection, processing, dissemination and evaluation, feedback and re-tasking must truly continue its loop as it goes to the thorniest problems: that

---

<sup>17</sup>Aiden Southall, ed., *Urban Anthropology: Cross-Cultural Studies in Urbanization*, (New York: Oxford University Press, 1973), *passim*.

of the changing motivations and intentions of people. It can never be wholly right. Certainly to act on preconceived constructs of the role of government and the legitimacy of force in a society will all too often get it wrong.<sup>18</sup> Even attributing a sympathy of means and ends to allies can establish erroneous expectations.

The word *ally* came to English from the Latin *alligare*, meaning, "to bind to." Allies may have complimentary though not necessarily congruent motives. Here the line between information and intelligence blurs. When using the word ally one thinks of the Anglo-American relationship in World War II (though seldom of the alliance of the U.S., Great Britain, and the U.S.S.R.). Rightly or wrongly it seems to have developed a cachet implying more than merely binding together for a common purpose, but rather one of fraternity. There is a danger in applying the term too loosely in OOTW. Cheek by jowl, U.S. forces may be expected to cooperate as part of a coalition (the very term implying a *temporary* alliance). The host country, civil authorities, and international bodies may be participating for very different reasons, sometimes quite apart from the ostensible purpose at hand. Some may join from religious or pan-national ethnic solidarity. Some may join for the internal domestic prestige which accrues from participating with the "great powers." Some international military officers believe that certain developing nations rotate their troops through U.N. operations to be refitted at the cost of that organization. Even murkier can be the rationale on the part of the host nation.

Just as the very introduction of international armed forces, especially U.S. forces, can fundamentally reorder the nature of a conflict, to accept one host nation ally over another faction may

---

<sup>18</sup>Robert Jervis, *Perception and Misperception in International Politics*, (Princeton, NJ: Princeton University Press, 1976), and Roberta Wohlstetter, *Cuba and Pearl Harbor: Hindsight and Foresight*, Rand Memorandum, no. RM-4328-ISA (Santa Monica, CA: The Rand Corporation, April 1965), 37-38. The Wohlstetter memo, later expanded into book length, is a classic of the intelligence sub-discipline of "Warning," or "Indications and Warning (I&W)."

precipitate rather than alleviate the situation. This was tragically demonstrated in Beirut in 1983 when the U.S. was seen arming the Gemayels. As one intelligence analyst put it at the time, "The government in Lebanon is not seen as the Lebanese government, it's seen as the Christians' government, and not even all the Christians recognize it as their government.... Therefore, any move on our part to support that government would be seen as support for the Christians, not as support for a settlement."<sup>19</sup>

With the already complex situation inherent in urban areas, such misreading of U.S. intentions can have catastrophic consequences. Is such knowledge of your allies intelligence or information? Must every potential ally be targeted by our own intelligence collection? How much is enough to truly understand the limits of a coalition? How different, if at all, must they be from neutrals?

Neutrals used to be perceived as states such as Switzerland and Sweden. Now, jealously protective of their independence, the term must be expanded to include private volunteer organizations (PVO's), other non-governmental organizations (NGO's), and the sometimes problematic status of the media. Although a part of the human environment, the Humanitarian Relief Organizations (HRO's) are as dynamic, ubiquitous, and at times, as opaque as to their agenda as the contesting groups. For example, when U.S. troops arrived in Somalia in December 1992 there were some 31 HROs. Three months later, in the rather tenuously calm environment the military had established, there were 60 HROs, and the numbers of workers had increased from about 350 to over 700.<sup>20</sup> They were largely based in the cities and larger towns whence they operated into the countryside. To add to the already strained relations between the various groups in the country, the HROs competed amongst each other and often expressed the view that that the role

---

<sup>19</sup> David Kennedy and Leslie Brunetta, *Lebanon and the Intelligence Community*, C15-88-859.0 (Harvard University, John F. Kennedy School of Government, 1988) A Harvard Case Study, 9.

<sup>20</sup> Johathan T. Dworken, *Military Relations With Humanitarian Relief Organizations: Observations From Restore Hope*, CRM 93-140 (Alexandria, VA: CNA, October 1993), 13-14.

of the military was to ensure their personal safety and security for the relief convoys they led. That is not to say that the relations were all, or even mostly, bad between the HROs and the military. In efforts to smooth the relief efforts First Marine Expeditionary Force (I MEF) established the Civil-Military Operations Cell (CMOC). It is probably fair to say that the military is most comfortable when dealing with other hierarchical organizations. But the HROs are not "built" that way and coordination efforts were not always smooth or efficient. Similarly, at the very heart of the military involvement in such a context is the idea that power, vested with legitimacy, can effect outcomes in the manner it wants.<sup>21</sup> The HROs, however, didn't always see it that way. When studying how the groups, through consensus, coordination, and shared ends, worked together, the phrase "like herding cats" comes to mind.

The role of intelligence and information collection and use is no less a part of such dynamics than any other aspect of the military in urban OOTW missions. Perhaps its role is even greater. One Center for Naval Analysis study even advocates the establishment of a Humanitarian Assistance Information Fusion Center.<sup>22</sup> It would serve to marshal and share information of use to *all* the organizations in such situations. Examples would include safe and dangerous areas and routes for relief convoys, cultural information, status of supporting infrastructure such as roads and sources of water, potential threats, and, of no small concern, information about the HROs themselves. That such an organization is deemed necessary is an indication of the complexity of the problem.

---

<sup>21</sup>Jeffrey Pfeffer, "Understanding the Role of Power in Decision Making," in *Classics of Organization Theory*, 2d rev. ed. Jay M. Shafritz and J. Steven Ott eds. (Pacific Grove, CA: Brooks/Cole Pub. Co., 1978), 309-333.

<sup>22</sup>Sandra Newett and others, *Summary of Requirements for Humanitarian Assistance Operations*, CRM 95-155.10, (Alexandria, VA: CNA, April 1996), 12-14.

Finally, urban OOTW are, in fact, covered and dissected by the real professionals in the information gathering business, the press. While troops engaged in these operations may never speak to or seldom see a member of the press, the concern over media coverage seems to permeate the process. Such concerns are well founded. The images the press provides and their global dissemination have effects vastly disproportionate to their actual numbers on the ground. Because the media often shape the world's impression of the conditions where the military missions are being performed they are more than merely *voyeurs* in the operation. They are often both a significant part of the cause for initial U.S. involvement as well as judges of the mission's success. As such, are they sources *and* subjects of information. As the U.S. Marine Corps' *Media Skills* training guide puts it:

What the public thinks depends on what the public hears. The public depends on the American news media to keep it informed. Wire services, newspapers and radio and television stations are the 'intelligence network' for an informed American citizenry.<sup>23</sup>

## MISSIONS

Operations Other than War is simply the new name given to missions which the military has always performed. Two thousand five hundred years ago Sun Tzu appreciated some of its forms: "For to win one hundred victories in one hundred battles is not the acme of skill. To subdue the enemy without fighting is the acme of skill."<sup>24</sup> And he understood the value of intelligence and information: "What is called 'foreknowledge' cannot be elicited from spirits, nor from gods, nor by analogy with past events, nor from calculations. It must be obtained from men who know the

---

<sup>23</sup> *Media Skills Training Guide: A Media Primer*, (Washington DC: Headquarters U.S. Marine Corps, November 1995), 3.

<sup>24</sup> Sun Tzu, *The Art of War*, trans. Samuel B. Griffith (New York: Oxford University Press, 1971), 77.

enemy situation."<sup>25</sup> Putting the subject of urban warfare in context, he also said, "The worst policy is to attack cities. Attack cities only when there is no alternative."<sup>26</sup> In more recent times the 1940 edition of the Marine Corps' *Small Wars Manual* describes the duties of the intelligence officer to include, "not only information of the military situation, but the political, economic, and social status of the occupied area."<sup>27</sup> But the Marines didn't invent the idea nor were they the first to apply it to the urban environment. The U.S. Army in Manila between 1898 and 1902 may be seen as masters of both urban Operations Other than War and in supporting them with effective and organized intelligence efforts.<sup>28</sup>

One of the fundamental difficulties with establishing a taxonomy for OOTW is that by its very name it is the "all others" of military operations. While "high" and "mid-intensity" conflict may be useful definitions, "low intensity" and OOTW do not really define either the missions or the environment. Without trying to define an essentially amorphous set of conditions, one might at least characterize OOTW as an environment where conventional military operations are not the predominant feature. It all grows into tautology very quickly. Defining the intelligence and information requirements for these inchoate and rapidly changing environments and then narrowing the focus to the conduct of such operations in a city can seem to be a nearly overwhelming task.

To aid in the complex environment of urban MOOTW, joint doctrine provides some guidance. It includes the injunction that:

"In MOOTW involving in-depth coordination or interaction with NGOs and PVOs and most UN operations, **the term 'information gathering' should be used rather than the term 'intelligence.'** The term

---

<sup>25</sup>SunTzu, 145.

<sup>26</sup>Sun Tzu, 78.

<sup>27</sup>*Small Wars Manual*, (Washington DC: Headquarters, U.S. Marine Corps, 1940), Reprinted as NAVMC 2890, April 1987, 19.

<sup>28</sup>Brian M. Linn, "Intelligence and Low-Intensity Conflict in the Philippine War, 1899-1902" *Intelligence and National Security* 6, no.1 (1991): 90-114.

'information gathering' is also appropriate in peacekeeping operations because peacekeepers must be overt, neutral, impartial. **Non-military organizations may resent being considered a source of intelligence.** (emphasis in the original)<sup>29</sup>

Admittedly, this says little about the specific application of intelligence and information with regard to any particular mission other than peacekeeping, but the implicit acknowledgment of the power of words and definitions is important. Each type of OOTW mission, whether or not conducted in an urban environment must be sensitive not only to the information and intelligence requirements but to the *perceived use* of information gathered to meet those requirements.

The Department of Defense Joint Publication on operations other than war identifies sixteen types of MOOTW.<sup>30</sup> Four are specifically maritime or air operations. The remaining twelve are:

Arms control

Combating terrorism

DOD Support to Counter drug Operations

Humanitarian Assistance (HA)

Military Support to Civil Authorities (MSCA)

Nation Assistance/Support to Counterinsurgency

Noncombatant Evacuation Operations (NEO)

Peace Operations (P0)

Recovery Operations

Show of Force Operations

Strikes and Raids

Support to Insurgency

---

<sup>29</sup> Joint Pub. 3-07, IV-3.

<sup>30</sup> Joint Pub. 3-07, iv.

Any of those twelve can be conducted on urban terrain. Some may require conventional military operations of the type addressed in Army publications such as Field Manual (FM) 90-10, *Military Operations on Urbanized Terrain* and FM 90-10-1, *An infantryman's Guide to Combat in Built Up Areas*. Generally, conventional military operations require the type of information available through the traditional functions of the intelligence staff; location of a clearly identified enemy, construction methods of his defenses (enhancements to extant buildings and other man-made features), thereby analyzing how the enemy can be expected to fight and how the terrain affects operations. Unfortunately, most of the twelve OOTW missions on urban terrain are either not conventional warfighting problems, or have significant complicating components of non combat operations. One may clearly define where and who the "bad guys" are, but be forced to choose between repairing a storm sewer on one block, battling insurgents holed up in a factory on a block to the north, and fighting off armed teenage gangs attempting to steal relief supplies from an HRO on a block to the south. All of these things may be going on simultaneously. The limited resources and sometimes conflicting requirements for information and intelligence must be capable of what is called in computer parlance, "multitasking." In the scenario described there seems to be but little room for common requirements to support the three events taking place. In fact, the fundamental requirement to understand the city as a system serves, to some extent, all of the requirements.

To understand the flow of the urban "system" requires a micro view of the traditional nodal analysis conducted in exhaustive detail by agencies such as the Joint Command Control Warfare Center (JC2WC) at Lackland Air Force Base, Texas. The focus may be different with OOTW missions rather than targeting as the desired end result but many of the principles will remain the same. Power and communications nets, to include hubs at which transportation methods change

modes, are already a part of nodal analysis. What is also necessary to support urban OOTW missions are things that are traditionally relegated to the social sciences. The "fuzzy logic" of social organizations whether they be gangs, clans, organized crime, or employment based groups all display specific, albeit changing, relationships.<sup>31</sup> An exchange system must exist to provide food and water to citizen, HRO and terrorist alike. These systems often have an electronic component and a tangible component. A telephone order for the tangible element of food, water, fuel or ammunition will usually have a symbolic or arbitrary component such as a piece of paper or wafer of metal (money), or on an even more abstract level, electronic requests are placed, tangible products are delivered, and electronic orders for payment are fulfilled. The subtlety and sophistication of such systems may not rightly be the purview of military intelligence but may nonetheless be essential to the accomplishment of a MOOTW mission.

The tactical level--that of the men digging or fighting---may be described as treating symptoms. The enemy, the gang doing the shooting or brandishing of weapons, and the faulty storm sewer system backing up onto the streets, are the end results of systems which the military commander operating in the city must understand. How did the people in the building get the ammunition and how did they pay for the weapons? How will they be resupplied? While the squad leader or engineering crew supervisor must carry on the fight in the streets, the operational level commander must see the way to interdict the future eruptions of such symptoms.

As a way of tying missions to means of accomplishment, both the Army and the Marine Corps have taken great strides in systematizing the information requirements for urban OOTW missions.

<sup>32</sup> Though the "all others" character of many specific OOTW missions may require different

---

<sup>31</sup> Southall, *passim*.

<sup>32</sup> FM 34-7, *Intelligence and Electronic Warfare Support to Low-Intensity Conflict Operations*, (Washington DC: Department of the Army, May 1993), appendices (G) through (M) and (For Official Use Only) *Generic Intelligence Requirements Handbook (GIRH)*, MCIA-1540-002-95,

constructs and some of the questions are probably unanswerable, a rules based organization such as the military must not hesitate to reach for other nontraditional sources of information. Indeed perhaps the single most common aspect of OOTW is that other elements of power are critical to mission accomplishment.<sup>33</sup> Each must bring with it the requisite "tools" of knowledge to accomplish what will inevitably be a strategically driven mission.

## RESOURCES

Intelligence resources are usually broken down into broad collection disciplines. Imagery intelligence (IMINT) encompasses optical, and digital images as well as radar and infrared "images" which are recognizable. SIGINT consists of the three sub-disciplines: COMINT, or communications intelligence, ELINT which captures chiefly radar emissions, and FISINT for "Foreign Instrumentation Signals Intelligence" which addresses rocket telemetry. Somewhere among the three, though by no means overlooked is the collection and exploitation of machine to machine communications. Examples of this include everything from electronic links between radar sites to the familiar modem chitter over the phone line which precedes Internet or facsimile connections. HUMINT is the most often cited when discussing intelligence support to operations other than war. It encompasses foreign "agents," spies, air crew debriefs, reconnaissance reporting, intelligence gained from prisoners of war and refugees, and combat reporting, that is, information gained from units in contact. One wonders if some of the reliance on HUMINT, at least in the context of urban operations is not reliance on the ability of other people to decipher the knotty and imprecise questions framed by the questioner. MASINT, the acronym used for measurement and signature intelligence is often the intelligence community's equivalent of OOTW; an all others

---

(Quantico, VA: Marine Corps Intelligence Activity, April 1995), Part B.

<sup>33</sup> Hans Binnendijk and Patrick L. Clawson, "The Instruments of National Power," *Joint Forces Quarterly*, (Winter 1995-96): 82-88.

category which is made up of, but not limited to radar intelligence (RADINT), emissions intelligence (EMINT), debris intelligence (DEBINT), acoustic, seismic, optical, and any of a number of other "INTs" based on detectable and measurable events. Finally, the newest entry is open source intelligence or OSINT which, is defined under "open source information" in the Department of Defense Dictionary as, "Information of potential intelligence value (i.e., intelligence information) which is available to the general public."<sup>34</sup> It is this open source environment which is the most intriguing when examining how to answer the questions of urban OOTW. An example of the potential uses of OSINT is included in appendix (A ) which is a site within the Open Source Solutions Company web site.<sup>35</sup>

Information collected in response to requirements, if from a single source, remains merely intelligence information, or in some cases "data," until it is corroborated by other disciplines or sources. Then it is processed, integrated and interpreted to produce "intelligence."<sup>36</sup>

All of this massaging of data will never produce either intelligence or knowledge unless properly framed. That art of asking the right question is one of the most difficult aspects of intelligence to support urban MOOTW. Going back to the insurgents in the factory scenario, what is it, exactly that a commander most wants to know? Is it the ambiguous, "Who are they?" or the impossibly specific given the time constraints of being in contact with the enemy, "How many are there? How are they armed? How much ammunition do they have? What will cause them to stop

---

<sup>34</sup>Joint Publication (Joint Pub.) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, (Washington DC: GPO, December 1989) 262.

<sup>35</sup>Newett et al., 2, 12-18. Also the *Washington Post*, of 13 August 1997 (A19) carried an advertisement for the "6th Annual International Conference and Exhibit, 'Global Security & Global Competitiveness: Open Source Solutions', " sponsored by the Open Source Solutions Company. Appendix (A) illustrates a site within their Internet web site.

<sup>36</sup>Joint Pub. 1-02, 184.

shooting and come out? Can I tear gas the building? How do I access the ventilation system? Are there any hidden exits through which they can escape?"

Framing relevant and answerable questions is an art which should receive much more attention. All too often the decision maker and his staff come up with a melange of symptom and system questions. "Will the rebel forces in the countryside link up with the rebels in the city for a coordinated attack on one of our security posts?" and "Are there *indications* of coordinated efforts such as increased communications and accessing by both groups of a single arms cache?"

Answering even well framed questions can be equally difficult. To assist in this effort the intelligence officer, the officers manning the CMOC, the logistian, the operations officer, and others, must all be able to access information resources whether they be labeled "intelligence systems" or simply "data bases." Information gathered by stealth and deception must still be protected but the need to protect that information, particularly in an urban environment, is often quite transitory. If, for example, U.S. forces possess the blueprints to the factory, they were very likely obtained through overt sources such as asking the architectural firm that built it. It need only be protected while the military is preparing a counteraction, after which it becomes merely information once again. If the effort to take the factory is a U.N. endeavor, it may not even be classified, just protected, even during the counter action phase.

Traditional intelligence sources as well as new, novel, or even non-intelligence sources and methods must be exploited without regard to niceties of definitional distinction. A brief review of each of the disciplines provides numerous examples.

Imagery need not be the product of clandestine theater and national resources. Commercial satellites provide multispectral imagery for every purpose from mining studies to watching the spread of insect infestation of crops to archaeological surveys. Optical imagery is used by

commercial map companies as well as attorneys acting to resolve questions of boundary for water rights or land titles. Such imagery is easily available and relatively cheap and quick to obtain. Low oblique as well as vertical imagery can be coupled with multi-spectral products to establish routes, determine the density and construction methods of buildings, reveal ambush sites and concentrations of vehicles.<sup>37</sup> Unmanned Aerial Vehicles (UAVs) are overt instruments for the military, obtaining objective views of the area of interest without unnecessarily risking patrols. In relief operations they can see fires and water well heads. Imagery is not only today's photos. Libraries and archives can produce photos showing earlier views of structures and infrastructure. Uses for this include modifications such as windows and other ground level accesses which have been cosmetically closed but still provide access through structural penetrations of buildings. A manhole cover in a photo which has subsequently disappeared can reveal long forgotten subterranean routes. In such an example, a distinction appears between "imagery," as the media from which the information is drawn and "open source," which speaks to the source of the information.

SIGINT is one of the most closely protected sources in the intelligence community, but its uses are minimized in the urban environment, first by the generally poor environment for radio communications (affecting not only intelligence but friendly force command, control, and communications via conventional military radios, and second, by the sheer volume of communications which takes place in a city. The Tofflers' popular books, *The Third Wave*, and *War and Anti-War*, describe an environment where the sheer volume of information diminishes its value, and implicitly the difficulty of the task of SIGINT.<sup>38</sup> While there are very clearly vital continuing roles for intercepted communications, OOTW in the urban environment will challenge to the maximum

---

<sup>37</sup> "Treasure Trove for Scientists," *Popular Science*, February 1996, 46.

<sup>38</sup> Alvin Toffler, *The Third Wave*, (New York: William Morrow and Co., 1980), and Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century*, (New York: Little, Brown and Co., 1993).

the ability of tactical units to capture and exploit the nuggets of gold from the mighty river of information. Add to this challenge the general lack of familiarity of most military intelligence specialists in the economically oriented data streams which hold the keys to understanding the system of the city. Electronic funds transfers through third country banks to pay for weapons shipments in "Arms Control," and "Combating Terrorism," missions are further hidden by the volume of such commercial transactions and the seemingly innocuousness of weapons described by catalog part numbers. Clearly some accommodation must be made to allow the civilian experts on such transactions to review and analyze the data, despite its sensitivity. An international financial analyst sitting at his Wall Street office computer terminal could pick out in an instant what would remain forever an enigma to a military analyst, trained in air defense network communications analysis. The exploitation of worldwide technical expertise should not be limited to the intelligence gathering aspect but to the exploitation of knowledge through "reach back" capabilities.<sup>39</sup>

Is the use of civilian experts, whether local or "virtually" collocated, HUMINT or simply information sharing? The definition of human intelligence itself should be expanded and renamed to include the concerns mentioned earlier in the joint publication. Words matter and they have meaning. To label information freely shared by a member of an HRO as "intelligence" threatens the source without any added value beyond mere definition. Also, the complex and changing nature of group dynamics in a city may make today's "clan warrior" tomorrow's "relief convoy driver."

---

<sup>39</sup> The U.S. Marine Corps has already started in this direction. Their "Chemical and Biological Incident Response Force (CBIRF)", which deploys from Quantico Virginia, electronically connects experts in academia as well as the Center for Disease Control (CDC) in Atlanta Georgia to Marines on the team via the Internet to help respond to incidents involving chemical and biological agents. The experts remain at their labs while the Marines respond, along with their laptop computer "reach back links."

Measurement and signature intelligence (MASINT) can become a true "all others" category in a good sense. The possibilities of low cost commercial off the shelf (COTS) equipment have gone far beyond office software and radios. Ground penetrating radars such as those used for archaeological surveys and in utility repair work can "see" through masonry walls. Fiber optic cameras used in medical procedures, which are small enough to be inserted in blood vessels can grant discrete views of the insides of rooms and containers. Robots which crawl through utility pipes looking for damage, can be pressed into service where humans may be at risk. Such things as harmless fluorescent chemical "dusting" used to find imperfections in machined metal parts and the tags already used to track chemicals which can be used in the manufacture of explosives, coupled with tiny electronic transmitters placed in cars which can be activated to find the vehicle should it be stolen can all be used to recover downed air crews, follow vehicles known to be used by insurgents, track relief vehicles back to the compounds where they are taken should they be stolen, and not the least, inexpensively aid in locating or preventing the loss of prominent local civilians who are likely victims of kidnapping during peacemaking and nation building efforts.

It is, however, in the open source information/intelligence (OSINT) where the greatest short term, low-cost gains probably can be made in urban MOOTW. The information age, coinciding with the global transparency brought about by the Internet, the fall of the bipolar world order, satellite news broadcasts, and growing economic and educational interdependence has placed tremendous information resources literally at the fingertips of military decision makers. Though the impact of such technology on the developing world is much less than some visionaries would like to believe, no country is truly isolated and many of the most troubled regions of the developing world maintain ties of language and favorable immigration status with the former colonial

powers whence the failing colonial nation state came.<sup>40</sup> The best maps and guides to how a third world city works may be resident not in the city itself but in archives in London or Paris, or in the offices of prominent engineering firms, banks and commercial activities in the developed capitols of the world. Linguistic and regional expertise, always in short supply for the low density languages of the developing world can often be found in the newly naturalized citizens of the world's more prosperous countries. Kuwaiti students throughout the U.S. and Somali cab drivers in Washington DC were both called upon to serve when the U.S. went to aid those nations. The bureaucracies that inspire so much disdain to citizens of the developed world are also very good at keeping track of immigrants and on-line information retrieval is no longer the purview of the few. While the U.S. may never achieve, or have recourse to use the battlefield transparency promised in DOD's *Joint Vision 2010*, or in the so-called "Admiral Owens' System of Systems," the incremental advances in technology and the dissemination of information provide the differences when viewed over time, of a true revolution of military affairs.

## CONCLUSIONS

Unlike conventional military operations on undeveloped terrain, operations other than war, conducted in cities, are heavily influenced by a variety of complex and changing circumstances. The physical environment tends to create asymmetric advantages for the defender, canalize and break up coordinated large scale military operations, slow movement, minimize the effectiveness of U.S. weapons, and degrade communications and battlefield surveillance and intelligence systems. The terrain is rendered more difficult by the multiple dimensions, subsurface, surface, and the walls and high ground of urban "canyon walls."

---

<sup>40</sup> Claude Moisy, "Myths of the Global Information Village," *Foreign Policy* no. 107 (Summer 1997): 78-87.

In addition to the difficult terrain, cities also introduce a wide range of actors: enemies, the indigenous population (these two may often change roles), neutral or tenuously "allied" groups of humanitarian relief organizations (HROs), coalition or host nation partners, each of whom may have reasons for involvement which are different from U.S. motives, and media representation whose influence on operations is vastly disproportionate to their numbers. American constructs of how nations *should* work may be confused with how things *do* work, making situations seem irrational and hard to predict. All of the preceding conditions are exacerbated by the constricted terrain, difficult living conditions and close proximity caused by the physical environment of the city.

The third and final requirement for cities is that they contain systems and are parts of larger systems. Infrastructure, social groups, and fitting within a larger economic system are central to their very existence. Cities cannot exist without this interaction for they cannot sustain their populations within their borders.

Given the nature of urban MOOTW the line between intelligence and information is often unclear and changing. The traditional disciplines of intelligence collection, while useful, can at times be inadequate or counterproductive. The most promising ways to obtain requisite intelligence seem to be commercial off-the-shelf systems (COTS), and embracing the transparency, and one might say, devaluation of information. The acceptance of an environment permeable to information rather than one where control and hierarchical structures of information are imposed will probably be more effective than to strictly adhere to outmoded concepts of "intelligence" and "information."

Of the 27 times the United States Marine Corps has been committed since 1977, 21 have had an urban component.<sup>41</sup> By 2025 the world's population will have grown from the 1990 level of 5.3 billion to about 8.5 billion (up from 1 billion in 1825). Fifty-seven percent of the population, approaching 5 billion people, will live in cities. Within the next two or three years, there will be 20 cities with populations of 11 million or more, 17 of them in the developing world. Most of that population will be young and under-employed. The population densities in those cities, with some at over ten times the density of New York City, stagger the imagination.<sup>42</sup> While statistics, especially extrapolations, can be made to present any point of view, the trend seems to say that the U.S. military will continue to be committed to urban missions in the future, and that they will most likely be committed to missions where the foreknowledge provided by intelligence and information will shape their decisions with dramatic results.

---

<sup>41</sup> Col. James A. Lasswell, USMC, "Wall To Wall," *Armed Forces Journal International*, January 1998, 37.

<sup>42</sup> Paul Kennedy, from, *Preparing for the Twenty-First Century*, 27-29; reprint in *The Seven Revolutions Reader*, (Quantico VA: Marine Corps Command and Staff College, AY 1995-96), 26-39.

## OSS Intelligence Mall

### Grand Opening Soon

Welcome to the OSS Intelligence Mall. This area is currently under construction and should be functional soon.

Welcome to the OSS, Inc. Intelligence Mall, a free public service which is under construction. Your comments and additional suggested links are most welcome--please address them to our WebMaster, [Akira@cache.net](mailto:Akira@cache.net).

Our Virtual Mall can be tailored to meet your needs. If you wish, click on any regional button and/or any functional button, to down-size our Mall to only those entries and links which pertain to that specific region or that specific function.

REGIONAL RELEVANCE	FUNCTIONAL RELEVANCE
• Africa and Arabia	• National Policymakers
• Asia, Australia, and the Pacific	• Economic & Financial Analysts
• China Only	• Competitive Business Analysts
• Europe (East and West)	• Regional Analysts
• North America	• Military Analysts
• Russia Only	• Scientific & Technical Analysts
• South America	• Law Enforcement Analysts
• United States of America Only	• Special Librarians

Now you can go shopping. What we have done is organized five years worth of *OSS NOTICES* and OSS Symposia *Proceedings* so that you can get directly to the contents in relation to the following general niche areas in the world of open sources, systems, and services. This is a Mall "under construction", so we happily acknowledge that it is assuredly incomplete, and we offer the contents "as is" and without any guarantee. We will note, however, that we do not do "negatives" -- offerings that we do not like or respect do not get listed, so in general, if it is listed, we like it, and if it is not, we either don't know about it, or don't like it. This is an "information commons" so we welcome your suggestions about links and capabilities that should appear in the OSS Intelligence Mall.

Open Source Examples	Open System Examples	Open Service Examples
Current Awareness	Internet Search Tools	Online Search & Retrieval
Current Contents	Data Entry Tools	Foreign Media Monitoring
Subject-Matter Clearinghouses (Universities)	Database Construction and Management Tools	Human Document Abstracting and Indexing
Conference Proceedings and Papers	Data Retrieval, Routing, and Records Management Tools	Document Translation and/or Digitization
Direct Access to Commercial Online Databases	Automated Document Abstracting and Indexing	Gray Literature Discovery and Retrieval
Contextual/Cultural Orientation	Automated Document Translation	Experts on Demand
Document Acquisition	Knowledge-Base Construction	Telephone Surveys
Subject-Matter Commercial	Data Mining and Visualization	Private Investigation and

Databases	Tools	Direct Debriefings
Risk Assessment Reports	Desktop Publishing Tools	Market Research
Expert and Association Directories	Multi-Media Communications Tools	Strategic Literature and technology Forecasting
Photographic Archives	Digital Imagery Processing Tools	Map and Chart Procurement
Digital Data Archives	Electronic Security and Administration Tools	Commercial Imagery and Map Production

## BIBLIOGRAPHY

Allard, Kenneth. *Somalia Operations: Lessons Learned*. Washington, DC: National Defense University Press, 1995.

*Aviation Combat Element Military Operations on Urban Terrain. Draft Edition IV*. MCAS Yuma, AZ: United States Marine Corps, Marine Aviation Weapons and Tactics Squadron One (MAWTS-1). September 1996.

Baldwin, Hanson W. *Battles Lost and Won: Great Campaigns of World War II*. New York: Harper & Row, 1966.

Bigelow, Michael E., Captain, USA. "The Apache Campaigns Under General Crook." *Military Intelligence PB 34-90-3*, vol. 16, no. 3 (July-September 1990): 38-40.

Binnendijk, Hans, and Patrick L. Clawson. "The Instruments of National Power." *Joint Forces Quarterly* (Winter 1995-96): 82-88.

Blanchard, Christopher E., Major. "Noncombatant Evacuation Operations." *Marine Corps Gazette*, (March 1997): 56-62.

Blandy, Charles. "The Battle for Grozny." In *Jane's Intelligence Review*, vol. 7, no. 2 (1995): 53-56. Reprint in *Operations Other Than War Readings*. Quantico, VA: United States Marine Corps Command and Staff College, AY 1996-7, 268-271.

Bolger, Daniel P. "The Ghosts of Omdurman." *Parameters: US Army War College Quarterly* 21, no. 3 (Autumn 1991): 28-39.

Boyd, Austin W., Jr., Cmdr., USN. "The Heart of the 'War Beast'" *Naval Space Command Space Tracks (Fall 1997)*: 4-7.

Bunker, Robert J. "Epochal Change: War Over Social and Political Organization." *Parameters: US Army War College Quarterly* 27, no. 2 (Summer 1997): 15-25.

Burke, Captain and Captain Kleine. USMC, Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) Student Handout CWTI 00209. *Aviation Combat Element MOUT*. Yuma, AZ: MAWTS-1, 8 February 1993.

Cohen, Eliot A. "A Revolution in Warfare." *Foreign Affairs*, 75, no. 2 (March-April 1996): 37-55.

"A Concept for Future Military Operations on Urbanized Terrain." (Unsigned insert under cover letter by LtGen. Paul K. Van Riper, USMC) *Marine Corps Gazette* (October 1997): A1- A7.

Byars, William R., III, First Lieutenant, USA. "UAVs at the AWE: Lessons Learned and Future Applications." *Military Intelligence Professional Bulletin* 23, no. 3 (July-September 1997): 14-16.

Clark, Alan. *Barbarossa: The Russian-German Conflict 1941-45*. New York: The New American Library, Inc., 1966.

Chairman of the Joint Chiefs of Staff. *Joint Vision 2010- America's Military: Preparing for Tomorrow*. Washington, DC: Pentagon, undated.

Chayes, Antonia Handler and George T. Raach, eds. *Peace Operations: Developing an American Strategy*. Washington, DC: National Defense University Press, 1995.

Cody, Edward. "Peacekeepers' Pastoral." *Washington Post*, 25 August 1997, Sec. A12.

Drago, Steven R., Captain, USAF. "Joint Doctrine and Post-Cold War Military Intervention." *Joint Force Quarterly*, no. 14 (Winter 96-97): 106-110.

Dworken, Jonathan T. *Improving Marine Coordination with Relief Organizations in Humanitarian Assistance Operations*. CRM 95-161.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Dworken, Jonathan T. *Military Relations With Humanitarian Relief Organizations: Observations from Restore Hope*. CRM 93-140. Alexandria, VA: Center for Naval Analyses, October 1993.

Estilow, R A., Lieutenant Colonel, USMC. *U.S. Military Force and Operations Other than War*. Maxwell Paper No. 3. Air War College. Maxwell Air Force Base, AL: August 1996.

Field Manual (FM) 30-10. *Military Geographic Intelligence (Terrain)*. Washington, DC: Headquarters, Department of the Army. March 1972.

Field Manual (FM) 34-3. *Intelligence Analysis*. Washington, DC: Headquarters, Department of the Army. March 1990.

Field Manual (FM) 90-10. *Military Operations on Urban Terrain (MOUT)*. Washington, DC: Department of the Army. 15 August 1979.

Field Manual (FM) 90-10-1. *An Infantryman's Guide to Urban Combat*. Washington, DC: Department of the Army. September 1982.

Field Manual (FM) 100-19/Fleet Marine Force Manual (FMFM) 7-10. *Domestic Support Operations*. Washington, DC: Department of the Army and Headquarters United States Marine Corps. July 1993.

Field Manual (FM) 100-20/Air Force Publication (AFP) 3-20. *Military Operations in Low Intensity Conflict*. Washington, DC: Department of the Army and Department of the Air Force. December 1990.

Field Manual (FM) 100-23. *Peace Operations*. Washington, DC: Department of the Army. December 1994.

Fleet Marine Force Manual (FMFM) 3-21. *MAGTF Intelligence Operations*. Washington, DC: Headquarters, United States Marine Corps, Department of the Navy. May 1991.

Fleet Marine Force Reference Publication (FMFRP) 3-28. *Tri-MEF Standing Operating Procedures for Field Intelligence Operations*. Washington, DC: Headquarters, United States Marine Corps, Department of the Navy. April 1992.

Glaab, Charles N., and A. Theodore Brown. *A History of Urban America*. New York: The Macmillan Company, 1967.

*GNI (Global Network Intelligence): Technology Tutorials and Overviews and Vocabulary*. Delran, NJ: Datapro, a McGraw-Hill Information Systems Company, 1993.

Goodman, Glenn W., Jr. "Deep Underground Tunnels." *Armed Forces Journal International*, (June 1997): 61.

Graham, James R. ed. *Non-Combat Roles for the US. Military in the Post-Cold War Era*. Institute for National Strategic Studies (Proceedings from 1992 topical symposium). Washington, DC: National Defense University Press, 1993.

Greenwood, John E., Col, USMC (Ret.). "Editorial: A Perspective on Urban Conflict." *Marine Corps Gazette*, (October 1997): 2.

Hart, B.H. Liddell, Captain. "The Remaking of Modern Armies." *The Army Quarterly*, (1927): 88-112.

Hayes, Margaret Daly and Gary F. Wheatley, eds. *Interagency and Political-Military Dimensions of Peace Operations: Haiti - A Case Study*. Washington, DC: National Defense University, 1996.

Headquarters, United States Marine Corps, Division of Public Affairs. "Media Skills Training Guide: A Media Primer." Washington DC: US Government Printing Office, November 1995.

Hockstader, Lee. "How Did We Deserve This?" *Washington Post Magazine*, 17 August 1997, 12-17, 28-30.

Ignatieff, Michael. "Unarmed Warriors." *The New Yorker*, 24 March 1997, 54-71.

Jervis, Robert. *Perception and Misperception in International Politics*. Princeton, NJ: Princeton University Press, 1976.

Joffe, Josef "How America Does It." *Foreign Affairs* 76, no. 5 (September/October 1997): 13-27.

Joint Task Force Commander's Handbook for Peace Operations. Fort Monroe, VA: Joint Warfighting Center, 28 February 1995.

Joint Publication (Joint Pub) 1-02. *Department of Defense Dictionary of Military and Associated Terms*. Washington DC: GPO, December 1989.

Joint Publication (Joint Pub) 2-01. *Joint Intelligence Support to Military Operations*. Washington, DC: GPO, 20 November 1996.

Joint Publication (Joint Pub) 3-07. *Joint Doctrine for Military Operations Other Than War*. Washington, DC: GPO, 16 June 1995.

Joint Publication (Joint Pub) 3-08. *Interagency Coordination During Joint Operations* Vol II. Washington, DC: GPO, 9 October 1996.

Katz, Samuel M. "Felon Busters." *Popular Mechanics*, May 1997, 56-61

Kennedy, David and Leslie Brunetta, at the direction of Gregory Treverton. *Lebanon and the Intelligence Community*. Case Study C15-88-859.0. Cambridge, MA: Harvard University Kennedy School of Government, 1988.

Kennedy, Paul. "The Demographic Explosion." In *Preparing for the Twenty-First Century*. 21-46. Reprint in *The Seven Revolutions Reader*. Quantico, VA: Marine Corps Command and Staff College, AY 1995-96, 26-39.

Kerner, Otto, Gov and others. *The Kerner Report: The 1968 Report of the National Advisory Commission on Civil Disorders*. New York: Pantheon Books, 1988.

Kiesecker, Peter. "Relationships between Non-Government Organisations and Multinational Forces in the Field." In *Peacekeeping: Challenges for the Future*. Ed. Hugh Smith, 67-75. Canberra, Australia: Australian Defence Studies Centre, 1993.

Krulak, Charles C., Gen., USMC *The 31st Commandant's Planning Guidance: A Marine Corps for the 21st Century*. Quantico, VA: Marine Corps Association, July 1995.

LaMon, Kenneth. *Training and Education Requirements for Humanitarian Assistance Operations*. CAB 95-83. Alexandria, VA: Center for Naval Analyses, July 1995

Lasswell, James A., Col, USMC. 'Wall to Wall: Sea Dragon's Next Phase Explores Urban Warfighting Tactics for the 21st Century.' *Armed Forces Journal International*, (January 1998): 36-39.

Linn, Brian McAllister. "Intelligence and Low-Intensity Conflict in the Philippine War, 1899-1902." *Intelligence and National Security* 6 (1991): 90-114.

Luttwak, Edward, N. "Toward Post-Heroic Warfare." *Foreign Affairs*. vol. 74, no. 3 (May/June 1995): 109-122.

Marine Corps Development and Education Command (MCDEC) Operational Handbook 8-7 (OH 8-7). *Military Operations on Urban Terrain (MOUT)*. Quantico, VA: MCDEC, November 1980.

Marine Corps Doctrinal Publication (MCDP)2. *Intelligence*. Headquarters United States Marine Corps, Washington, DC: 7 June 1997.

Marine Corps Intelligence Activity. MCIA-1540-002-95. (FOUO) *Generic Intelligence Requirements Handbook*. 2nd ed. Quantico, VA: U.S. MCIA, April 1995.

McGrady, Katherine A.W. *The Joint Task Force in Operation Restore Hope*. CRM 93-114. Alexandria, VA: Center for Naval Analyses, March 1994.

McGrady, Katherine A.W. and others. *CNA 's Humanitarian Assistance Operations Game: A Summary Report*. : CIM 392. Alexandria, VA :Center for Naval Analyses, November 1995.

McKibben, Bill. "A Reporter At Large: Apartment." *The New Yorker*, 17 March 1986, 43-91.

Middleton, Drew. *Crossroads of Modern Warfare*. New York: Peter Bedrick Books, 1984.

Moisy, Claude. "Myths of the Global Information Village." *Foreign Policy* no. 107 (Summer 1997) : 78-87.

Neer, Michael M., Col, USA. *Multispectral Imagery in Support of Low Intensity Conflict*. United States Army War College Military Studies Program, Carlisle Barracks, PA: 29 March 1990.

Nelson, John J. and others. *Measures of Effectiveness for Humanitarian Assistance Operations*. CRM 95-166.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Newett, Sandra and others. *Emerald Express '95: Analysis Report*. CRM 95-156.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Newett, Sandra L. *Planning for Humanitarian Assistance Operations*. CRM 95-151.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Newett, Sandra and others. *Summary of Requirements for Humanitarian Assistance Operations*. CRM 95-155.10. Alexandria, VA: Center for Naval Analyses, April 1996.

"NGOs & UNHCR." *Refugees*, vol. 3 (1994): 3-30

Open Source Solutions Inc. *IntelMall*. <http://www.oss.net/IntelMall/> (accesssed 10 Jan 1998).

Pausanius, *Description of Greece*. <http://hydra.perseus.tufts.edu/ogi-bin> (accessed 12 May 1998).

Peters, Ralph, LTC, USA. "After the Revolution." *Parameters US Army Quarterly* 25, no. 2 (Summer 1995) 7-14.

Peters, Ralph, LTC, USA. "The New Warrior Class." *Parameters US Army Quarterly* 24, no. 2 (Summer 1994) 16-26.

Phillips, Ed, Colonel. "Army SOF: Right Tool for OOTW." *Special Warfare, USAJFKSWCS*, PB 80-97-3. (Summer 1997): 2-13.

Pincus, Walter. "CIA Turns to Boutique Operations, Covert Action Against Terrorism, Drugs, Arms." *Washington Post*, 14 September 1997, Sec.A6.

"Population Tidal Wave." *Washington Post*, 3 Jan 1998, Sec. A17.

Quist, Terry C., Second Lieutenant, Mass. Army National Guard. "Language Experts in the Ranks." *Military Intelligence PB* 34-90-3, vol. 16, no. 3 (July-September 1990): 19-21.

Raach, George T. and Ilana Kass. "National Power and the Interagency Process." *Joint Force Quarterly*, (Summer 1995): 8-13.

Reichhardt, Tony. "Water World." *Popular Science*, February 1996, 70-71.

Shacochis, Bob. "The Immaculate Invasion." *Harper's Magazine*, February 1995, 44-62. Reprint in *Operations Other Than War Readings*, vol. 2. Quantico, VA: United States Marine Corps Command and Staff College, AY 1996-97, 115-133.

Shafritz, Jay M. and J. Steven Ott Eds. *Classics of Organization Theory*. 2d rev. ed. Pacific Grove, CA: Brooks/Cole Publishing Company, 1987.

Sheehan, John J., Gen., USMC. "Building the Right Military for the 21st Century." *Strategic Review*, vol. 25, no.3 (Summer 1997): 5-13.

Siegel, Adam B. *A Chronology of U S. Marine Corps Humanitarian Assistance and Peace Operations*. CIM 334. Alexandria, VA: Center for Naval Analyses, September 1994.

Siegel, Adam B. *Requirements for Humanitarian Assistance and Peace Operations: Insights From Seven Case Studies*. CRM 94-74. Alexandria, VA: Center for Naval Analyses, March 1995.

Siegel, Adam B. *The Role of Civil Affairs and Psychological Operations in Humanitarian Assistance Operations*. CAB 95-85.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Siegel, Adam B. and others. *The U. S. Marine Corps and Domestic Operations: Insights on Requirements*. CAB 95-86.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Siegel, Adam B. *To Deter, Compel, and Reassure in International Crises: The Role of U.S. Naval Forces*. CRM 94-193. Alexandria, VA: Center for Naval Analyses, February 1995.

*Small Wars Manual*, Washington, DC: Headquarters, United States Marine Corps (1940 Edition reprinted as NAVMC 2890). United States Government Printing Office, April 1987.

Smith, Karen D. *Command and Coordination in Humanitarian Assistance Operations*. CRM 95-165.10. Alexandria, VA: Center for Naval Analyses, April 1996.

Southall, Aldan, Ed. *Urban Anthropology: Cross-Cultural Studies of Urbanization*. New York: Oxford University Press, 1973.

Stewart, George, Scott M. Fabbri, and Adam B. Siegel. *JTF Operations Since 1983*. CRM 94-42. Alexandria, VA: Center for Naval Analyses, July 1994.

Sun Tzu. *The Art of War*. Trans. Samuel B. Griffith. New York: Oxford University Press, 1971.

Sweetman, Bill. "Spies in the Sky." *Popular Science*, April 1997, 43-48.

Szafranski, Richard. "When Waves Collide: Future Conflict." *Joint Force Quarterly*, (Spring 1995): 77-84.

Toffler, Alvin. *The Third Wave*. New York: William Morrow and Company, 1980.

Toffler, Alvin and Heidi. *War and Anti-War: Survival at the Dawn of the 21st Century*. New York: Little, Brown and Company, 1993.

"Treasure Trove for Scientists." *Popular Science*, February 1996, 46.

Turberville, Graham H., Jr., Colonel William W. Mendel, US Army, Retired, and Jacob W. Kipp. "The Changing Security Environment." *Military Review*, vol. 77, no. 3 (May-June 1997): 5-10.

Van Riper, Paul, LtGen., USMC, and Maj. Gen. Robert Scales, USA. "Preparing For War in the 21st Century." *Strategic Review*, vol.25, no. 3 (Summer 1997): 14-20.

Wilkinson, Spenser. "Killing No Murder: An Examination of Some New Theories of War." *The Army Quarterly* 15, (October, 1927, and January, 1928): 14-23.

Vick, James A., Jr., Captain. "Intelligence Support to Operation 'GITMO'." *Military Intelligence PB 34-93-2*, vol.19, no. 2 (April-June 1993): 6-9, 50.

Wilentz, Amy. "Letter from Haiti: Lives in the Balance." *The New Yorker*, 26 December 1994, 92-105. Reprint in *Operations Other Than War Readings*, vol. 2. Quantico, VA: United States Marine Corps Command and Staff College, AY 1996-97, 139-150.

Wohlstetter, Roberta. *Cuba and Pearl Harbor: Hindsight and Foresight*. Rand Memorandum, no. RM-4328-ISA. Santa Monica, CA: The Rand Corp., April 1965.